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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PCT080	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/IT 02/00555	International filing date (<i>day/month/year</i>) 29.08.2002	Priority date (<i>day/month/year</i>) 29.08.2002
International Patent Classification (IPC) or both national classification and IPC E02F3/96		
Applicant MECCANICA BREGANZESE S.R.L. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 1 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 17.03.2004	Date of completion of this report 25.11.2004
Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Laurer, M Telephone No. +49 89 2399-7079



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/IT 02/00555**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

2-6 as originally filed
1 filed with telefax on 01.09.2004

Claims, Numbers

1-18 as originally filed

Drawings, Sheets

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
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International application No. **PCT/IT 02/00555**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	6-10,14
	No: Claims	1-5,11-13,15-18
Inventive step (IS)	Yes: Claims	
	No: Claims	6-10,14
Industrial applicability (IA)	Yes: Claims	1-18
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement;

1 Novelty and inventive step

- 1.1 In the terms of independent claim 1 (clarifications in bold letters) document US-A-3 959 897 (=D1) shows in figure 3 a bucket (18 in figure 1) for crushing and screening stone or similar materials, comprising a scoop-shaped body (see bucket edge 46 and side plates 42 forming the inlet opening of the bucket) defining an inlet opening for the stone to be crushed and an outlet (88) for the crushed stone, between which a direction of flow (see arrows in figure 3) of stone is defined, means (40, 68) for crushing the stone, the crushing means (40, 68) comprising a first jaw (68) and a second jaw (40) housed in the scoop-shaped body and movable relative to one another, and means (64, 65, 66) for moving the first jaw (68) relative to the second jaw (40), characterised in that the movement means (64, 65, 66) can impart to the first jaw (68) a movement **such that the first jaw (68) performs** a combined rotational and translational movement relative to the second jaw (40, see movement about eccentric shaft 64 moving inlet portion of jaw 68 mainly up and down but also having a component vertical to said up and down direction; an eccentric movement, such as disclosed in D1 moves the upper jaw on a circular path and thus imparts a translational movement to the outlet portion of jaw 68; see toggle plate 70 with its bearing rim in the jaw enabling a pivotal movement), in which a first component of the movement is away from and towards the second jaw (40) and a second component of the movement is substantially parallel to the direction of flow (see pivotal movement about the toggle plate bearing in the reaction block (72).
- All the features of such a claim are known from D1. Thus, this claim does not comply with Article 33(1)(2) PCT.
- 1.2 The features of claims 2-5, 11-13 and 15-18 are also at least implicitly known from D1 and are therefore not considered to contribute to novelty.
- Claim 2: Cross section of the outlet is adjusted by shims, see D1, column 3, line 43;
- Claim 3: First and second opposite ends at the inlet opening and outlet opening can be seen in Figure 3 of D1;
- Claim 4: Means for adjustment (70, 72, 74, 76) of the cross section and the

- movement of the first jaw (68), see figure 3 of D1;
- Claim 5: The jaw (68) is coupled to the eccentric (64), implicitly by a sleeve, D1, figure 3;
- Claim 11: D1, figure 3 implicitly comprises jaw crusher frames (36, 68) and plates (40, 41, and on the upper jaw, see respective cross section);
- Claim 12, 13: Parallel grooves on said plates (40, 41), see figure 2 of D1;
- Claim 15: The second jaw firmly fixed to the scoop shaped body, see figures 2 and 3 of D1;
- Claim 16: Resilient means (84) for urging the second end (at the outlet portion) against the strut (70), see figure 3 of D1;
- Claim 17: Means (86) for adjusting the load of the resilient means (84), see figure 3 of D1;
- Claim 18: Vibrator means (50, 52, 54) at the inlet opening, see figure 3 of D1;
- 1.3 The features of claims 6-10 and 14 are known from US-A-1 954 288 (=D2) and DE-A-580475 (=D3) for solving the respective objective technical problems and are not considered to contribute to an inventive step Article 33(1)(3) PCT. A skilled person starting from D1 and wishing to solve the respective objective technical problems would integrate the respective features and would arrive at the claimed subject-matter without involving an inventive step.
- Claim 6: Two eccentrics (7) are shown in D2, figure 1, for solving the objective technical problem: Improving drive mechanism of a crusher;
- Claim 7: A strut (20) being adjustable in inclination is shown in D2, figure 2 (see positions in bearing plate 21) for solving the objective technical problem: Improving a crusher;
- Claim 8: A first channel in the first jaw (68) is shown under the toggle plate (70) in figure 3 of D1;
- Claim 9: Second channel member (74) with spacers (76), see figure 3 of D1;
- Claim 10: Alternative operation positions are shown in D2, figure 2, see cavities in plate 21 enabling different positions of the strut 20 relative to the fixed jaw, for solving the objective technical problem: Improving a crusher;
- Claim 14: The alignment of the grooves (d1, e) is shown in D3, figure 2 for solving the objective technical problem: Improving a crusher;

A bucket for crushing and screening stone

Technical field

The present invention relates to a bucket for crushing and screening stone and similar materials, according to the preamble to the main claim.

5 Technological background

In the technical field in question, self-propelled vehicles equipped with buckets for collecting material such as stone or the like, inside which crushing means are provided for crushing the material collected to the desired size, are known.

Amongst others, an example of known crushing means comprises two jaws, of which one
10 moves pivotably relative to the other and which are moved in a manner such as to compress between them, and hence to crush, the material which is introduced into the bucket. However, these crushing means lead to some disadvantages which result in poor performance and non-homogeneity in the processing of the material treated. Known buckets therefore have high power consumption and are subject to blockage due to choking with the material introduced.

15 Stone crushing devices are known from US 3959897, US 1954288 and DE 580475. The first document discloses an excavating bucket having a vibrating cutter head and a crusher including a pair of jaws that are moved toward one another by an eccentric oscillating shaft. The shaft oscillation is so limited as to produce just an up-and-down movement of the jaws.

Description of the invention

20 The main object of the present invention is to provide a bucket for crushing and screening stone and similar materials in which the crushing operation is particularly effective and efficient.

A further object is to provide a bucket in which the size of the crushed material is easily adjustable.

Another object is to produce a bucket which is subject to little or no obstruction due to blockage
25 with the material treated.

Yet another object is to produce a bucket which can be adapted to a plurality of self-propelled vehicles and which can easily be produced in many different sizes.

A further object is to provide a bucket which permits optimal, in particular homogeneous, crushing of a plurality of different materials.

30 The objects proposed are achieved by the present invention by means of a bucket formed in accordance with the appended claims.

Brief description of the drawings

The characteristics and the advantages of the invention will become clearer from the detailed description of two embodiments thereof, described by way of non-limiting example with
35 reference to the appended drawings, in which: